TENDER HEART HIGH SCHOOL, SEC-33B, CHD

Class - 8 Date - 09.12.2024

Subject - Biology Teacher - Nidhi Rana

Chapter 3. Tissues - Plant and animal Tissues

Good morning students,

This lesson is of class 8 for the subject of Biology Topic Plant and animal tissues whichis covered in Chapter 3 Tissues: Plant and animal tissues starting on Page No 23 of your text book titled 'Concise Biology : Seling Publications and is being submitted to you on 09.12.2024 This voice is of Nidhi Rana. Children, Please open page no 25 of your text book as I am now going to explain you the 3rd type of permanent tissue ie. conducting tissue.

Conducting Tissues - are also called vascular tissues Xylem and Phloem are two types of conducting tissues.; while xylem conducts water and minerals in the plant, phloem conducts food materials in the plant. Let us discuss them one by one -

a) Xylem cells are elongated and thick walled through which water and minerals may be transported from roots to other parts of the plant. Older xylem tissues form the wood and does not participate in transportation of water. Age of a tree is determined by counting the annual rings. These rings are actually xylem rings. Tree rings form

because during each growth season new water and food conducting cells are added around the perimeter of the tree trunk. Also cells (of xylem) formed in spring season tend to be larger (because of availability of lot of water in spring season) than the previous set of cells produced in the previous summer. Thus, this difference in the size of the xylem cells (ie. small cells in summer and larger cells in spring) is distinctly visible as annual rings.

Xylem is composed of four elements -

(i) Tracheids are non living, elongated cells with tapering ends and with large cavities without any contents. Cells are placed end to end forming a long tube. They have highly lignified cell wall ie. cell walls have deposition of a substance called lignin that provides them with rigidity Function - Xylem Tracheids provide mechanical support by developing various types of thickenings in their walls.

ii Xylem vessel or Tracheae is a cylindrical tube like structure placed one above the other end to end. The end walls of vessels dissolve partially or completely forming a continuous channel. A vessel is also a non living cell with hard thick and lignified cell wall.

Students may please see Fig 3.7 showing variety of tracheids - Xylem elements on Page 25 of your text book.

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Xylem Parenchyma consists of living parenchyma cells associated with xylem Function These perform the function of storage of food and conduction of water and minerals Xylem fibres are made up of dead sclerenchyma cells. They are thick walled, long, narrow cells with tapering ends Function - These provide mechanical support to the plant.
Now, it is the break time children pause the audio for 3 mins to write the answers to the following questions Questions are as follows

Q1 Name the common term given to 'Xylem and Phloem' tissues.

Q2 Name 4 elements of xylem tissues.

You may now pause the audio. Break is over First listen to the correct answers.

A1 Vascular bundles or vascular tissues is the common term given to xylem and phloem.

A2 4 elements of xylem are - Tracheids, Xylem vessel, Xylem Parenchyma and xylem fibres
Now let us talk about the other component of vascular bundle or conducting tissues i.e. Phloem cells provide passage for downward movement of food manufactured in the leaves to various parts of plant and upward movement towards growing new leaves.

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Phloem is composed of 4 elements -

i Sieve Tubes are main conducting elements in Phloem. These are elongated cylindrical, thin walled cells arranged end to end forming a long tube The end walls of each sieve tube is perforated i.e. it has fine pores, like those in a sieve. The perfora-ted end walls are therefore termed as sieve plates Children please see Fig 3.8 showing sieve plates in phloem cells The pores or perforations are called sieve areas or pits. Food can easily pass through sieve pits At maturity sieve tubes lack nucleus, yet they remain living, dependent on the adjacent companion cells.

ii Companion cells are closely associated with sieve tubes. These are direct connections between the sieve tubes and companion cells. Companion cells help the sieve tubes in the conduction of food material

iii Phloem Parenchyma is concerned with storage of starch, fat and other organic food material.

iv Phloem Fibres are sclerenchymatous cells consisting of elongated, lignified cells that provide mechanical support to the plant parts. Children may again look at Fig 3.8 of your textbook to see different elements of Phloem tissues Let us now start with the discussion of animal tissues -

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Animal Tissues are of 4 main types -
1) Epithelial Tissue
2) Connective Tissue
3) Muscular Tissue
4) Nervous Tissue

So now we will discuss about 1st animal tissue i.e.

1 Epithelial Tissue is thin protective continuous sheet of cells all over the body.

Location It covers the surface of the body and lines the various body cavities and internal organs including blood vessels, cavities of mouth, throat, stomach, intestine, lungs etc. These cells lie close together with little or no intercellular space between them

Function - These provide protection to underlying tissues; some epithelial cells become glandular and perform secretory function; sensory perception; absorption etc are general functions of different epithelial tissues

Now let us discuss about Types of Epithelial Tissues - Based on shape and function Epithelial tissues are of following types -

a) Squamous Epithelium Cells are thin flat with prominent nucleus and are arranged edge to edge forming a delicate lining or covering. It forms the lining of cavities of ducts / blood vessels and lining of mouth and nasal cavities function It protects the underlying parts from injury, germs, chemicals and drying up by preventing loss of water

Children may see Fig 3.9 of your text book at Page No 27 to see the shapes of different kinds of Epithelial tissues.

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b) Cuboidal Epithelium have cells of cube shaped and a centrally placed nucleus is present. location These are found in some parts of kidney tubule and in some glandular ducts such as salivary glands, pancreatic ducts etc.

c) Columnar Epithelium have cylindrical cells which are much longer than broad hence look like bricks or columns location These are found in inner linning of stomach and intestine

Columnar epithelium is further of two types -

(i) Ciliated Columnar Epithelium The columnar cells have numerous thin delicate hair like projections called cilia arising from the outer free surface of cells Ciliated Columnar epithelium is found in the lining of Trachea Cilia keeps lashing and move the unwanted materials which may enter these regions and try to block them.

(ii) Glandular Epithelium contains large cells that secrete certain chemical substance These are found in lining of stomach and intestine where they produce digestive juices. At certain other places it is folded inward to form compact hollow tubular glands For example - sweat gland, tear gland or liver giving out their respective secretions.

d) Stratified Epithelium is found in skin and cornea of the eye It is composed of several

layers or strata of the same or different kinds of epithelial cells one above the other. These are found in places where there is much wear and tear, for example in the skin.
Children again look at Fig 3.9 to understand the structure and shapes of all these types of epithelial tissues.
This ends with today's class. Now I will give you some home assignment questions which you all have to answer in your notebooks -

Home assignment questions are as follows -

Q1. Draw well labelled diagram of different kinds of epithelial tissues in animal body.

Q2 Answer the following "Review questions" given on Page 32 of your text book in your note books

C Short Answer Type
Q No 1 and 4.

E structured Type
Q No 1.